April 22, 1963

Mr.G. M. Lawrence
Hunt Botanical Library
University of Pittsburgh
Pittsburgh, Penna.

Dear Mr.Lawrence:

Benjamin Franklin appears to be the first to have used leaves of trees and flowers as large pictures on paper money. The printing was accomplished with cast lead cuts. The mold for the casting of the cuts was apparently made by an impression of the actual leaves found in the Pennsylvania, New Jersey area. Others copied this procedure and from 1730 through 1780 most paper money of Delaware, Pennsylvania, New Jersey, Maryland, and the Continental Congress had full size pictures of leaves.

To our knowledge these leaves have never been identified and I wonder whether you or Mrs. Hunt have done or are familiar with any work done to identify these leaves.

I took this matter up with the Missouri Botanical Garden, in St. Louis, and they immediately referred me to you as being familiar with the flora of the eastern seaport and with illustrations of botanical material.

We will be glad to send you examples of this money, if you are not familiar with it, for examination. From both a botanical and a numismatic point of view I think it is important to obtain identifications of this curious use of leaves. It should be written up and I hope to do so. The back side of the leaves are used to make the castings so that the veins show through the strongest. The Philadelphia Art Museum is working on the history of the casting process.

Would you let us know what you can on this subject.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

cc: Mr. Rickard McNulty

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

1 May 1963
Dictated 27 April 1963

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Mo.

Dear Mr. Newman:

In response to your inquiry of 22 April, please be advised that it has not been my pleasure to identify leaves on paper money as designed by Benjamin Franklin and referred to in your letter.

I will be pleased to examine whatever documentary material you care to send for the purpose, photocopies or originals, and attempt to identify the leaves depicted.

Most sincerely,

George H. M. Lawrence
Director

GHML:fkh

May 6, 1963

Mr. George H. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Mr. Lawrence:

I appreciate your cooperation in offering to identify the botanical items on paper money and enclose herewith a Zerox copy of a group of them. I also enclose a control list.

I so happens that I will be in Pittsburgh on Friday, May 10, for the day, and will bring the items with me in the event you would like me to leave them for study. The pictures of the leaves are full size and I am looking forward to your identification of these items. I will telephone you.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

May, 1963

LOAN OF CURRENCY FOR LEAF IDENTIFICATION

ERIC P. NEWMAN, 6450 CECIL AVE., ST. LOUIS 5 MO.

Continental Congress

Date	Denom.	No.
2/17/76	1	38728
11/2/76	2	70249
11/2/76	3	??277
11/2/76	4	39988
11/2/76	5	3325
7/22/76	6	45213
7/22/76	7	30483
5/9/76	8	128500
4/11/78	4	196798
4/11/78	5	68354
4/11/78	6	21724
9/26/78	7	150566
4/11/78	8	Garrigues
9/26/78	20	158269
9/26/78	30	291747
9/26/78	40	239990
1/14/79	1	20096
"	2	4375
"	3	106106
"	4	5318
"	5	126086
"	20	31621
"	30	93664
"	35	131322
"	40	79494
"	45	107762
"	50	167685
"	55	169604
"	60	29315
"	65	74029
"	70	6228
"	80	47286

Maryland

Date	Denom.	No.
1770	1/9th	13218
1770	1/6th	14805
1774	2/9ths	11562
1774	1/3rd	6650
1770	1/2	13065
1767	2/3rds	11365
1774	1	20
1774	2	13761
1774	4	2253
1770	6	2691
1774	8	9230

Pennsylvania

1772	1 s	13497
1772	18d	5727
1772	2 s	13648
1772	2/6	12941
1769	5 s	1186
1775	10	3096
1775	15	332
1775	20	3884
1785	20	19145
1775	40 s	7671
1769	3L	Roberdeau
1760	5 L	8706

The foregoing have been selected for clarity of leaf design. There are other leaf designs on Penna. currency. Delaware has leaf designs also.

The cuts used to print the foregoing currency were made from actual castings or stereotypes of actual leaves and flowers. The cloth background appearing on many is a part of the same process. Neither the leaves nor the method of printing them have ever been written up so far as I know.

May 13, 1963

Mr. George M. L. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Mr. Lawrence:

I wish to thank you and Mr. Margadant for your kindness and cooperation with respect to my visit. You certainly gave me many leads with respect to the leaf printing problem and I will keep you advised of the progress of my research.

I look forward to receiving the Xerox copies of the items mentioned and will be interested to learn the contents of the Jackson article in the Herefordshire Natural History transaction.

I am taking the liberty, at the risk of being shot, of enclosing a few more Xerox copies of printed leaves on currency and hope these can be identified.

I will be more than glad to study the coins which you wanted me to see and you may send those any time it is convenient.

I hope that many more people have the opportunity to learn and use your library as I have. It is indeed fantastic.

Cordially,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

May 23, 1963

Dear Dr. Lawrence:

The design on the 2 sh. 6 pence which we thought might not be botanical matter may be a broad leaf grass or other monoclinous leaf cut and fitted in various ways. Note the alternate dark and light lines. I believe some varieties do not have cross lines.

What do you think?

Sincerely,

From the desk of
ERIC P. NEWMAN

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

27 May 1963

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Mo.

Dear Mr. Newman:

Thank you for your note of 23 May concerning the possible identification of a leaf as that of a grass of monocotyledonous leaf.

Mr. Margadant, who is to make the initial study of this material, was involved in an accident the day after you were here in which several ribs were broken. He is recovering nicely and we expect his return in another week's time. Shortly thereafter he will get at the task for I know he is much interested in it.

Thank you for the suggestion and you may be sure we will follow it up.

Most sincerely,

George H. M. Lawrence
Director

GHML:fkh

Cable: HUNTBOTLIB PITTSBURGH *Telephone* 621-4619 *Area code* (412)

June 6, 1963

Dr.G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh, Penna.

Dear Dr. Lawrence:

I was so sorry to hear of Mr. Margadant's injury and hope that he is well on the way to complete recovery.

I just visited Philadelphia and had an opportunity to see the Breintnall book made up of pressure prints of leaves. I am enclosing a copy of my notes because the book identifies many of the items. Others are unidentified. This may be of assistance to you in identifying the leaves on the paper money.

I also call your attention to certain comments included in the book because they indicate that some of theleaves were dried and remoistened, others were fresh, etc.

I look forward to hearing from you.

With best wishes,

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

5 July 1963

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Mo.

Dear Mr. Newman:

Responding to your note of 30 June I enclose the sixteen pieces of currency issued in 1799 by the Continental Congress.

Mr. Margadant and I have gone over these in an effort to determine the plants represented by the leaf forms. In some instances we have drawn a blank. For those which we feel we can assign a name, at least a generic name, the following report may be useful to you:

$ 1.00	Tanacetum, (tansy)
$ 2.00	Morus sp. (mulberry)
$ 3.00	Rosa sp.
$ 4.00	Morus sp. ?
$ 5.00	Parthenium sp. (feverfew)
$20.00	Morus sp. or small leaf of Vitis sp. (grape)
$30.00	Adlumia fungosa (climbing fumitory)
$35.00	Salix sp. (willow)
$40.00	Poterium fragment?
$45.00	?
$50.00	?
$55.00	Salix sp. + an abnormal leaf
$60.00	Salix sp. + ?
$65.00	?
$70.00	Acer sp. ? (maple)
$80.00	Fragaria sp. (leaflet, strawberry)

I enclose a carbon copy of this letter asking that you sign it, acknowledging receipt of the pieces listed above.

In a comparatively short time we should be able to report on and return to you the other pieces now held by us.

Very cordially yours,

George H. M. Lawrence
Director

GHML:hl
enc: 16 pieces of currency
as listed above

Cable: HUNTBOTLIB PITTSBURGH *Telephone* 621-4619 *Area code* (412)

July 5, 1963

Dr.C. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh, Penna.

Dear Dr.Lawrence:

I just received from the Philadelphia Library Company a copy of the notations of Joseph Breintnall indicating the various leaves which he had available for nature printing.

I presume you would like this for your library, in any event, and it will, of course, be helpful in identifications as this list should cover virtually all of the botanical items which are on the currency.

I look forward with great interest to the iddntifications.

Kindest regards.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

June 6, 1963

Dr. G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh, Penna.

Dear Dr. Lawrence:

I was so sorry to hear of Mr. Margadant's injury and hope that he is well on the way to complete recovery.

I just visited Philadelphia and had an opportunity to see the Breintnall book made up of nature prints of leaves. I am enclosing a copy of my notes because the book identifies many of the items. Others are unidentified. This may be of assistance to you in identifying the leaves on the paper money.

I also call your attention to certain comments included in the book because they indicate that some of theleaves were dried and remoistened, others were fresh, etc.

I look forward to hearing from you.

With best wishes,

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

August 14, 1963

Mr. George H. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Mr. Lawrence:

Thank you for your letter of July 5, 1963, with enclosures. The duplicate of that letter is enclosed herewith, duly acknowledged.

I sincerely thank you for the identifications in that list and am satisfied that your identifications are very accurate. I only hope the lists I sent you are helpful.

I look forward to receiving the rest of the items, duly identified, as you indicated.

I have not forgotten my promise to try to arrange for specimens of this currency to end up in your library.

You, personally, stated that you were going to send me the 1792 cent which you have as I would be very interested in examining it. Perhaps you can send it along with the balance of the paper money.

I hope that Mr. Margadant has recovered completely and that both of you are having a very pleasant summer.

Cordially,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

The Rachel McMasters Miller Hunt Botanical Library
Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

16 August 1963

Mr. Eric P. Newman
Eric P. Newman Numismatic
Education Society
6450 Cecil Avenue
St. Louis 5, Missouri

Dear Mr. Newman:

This is to acknowledge your letter of 14 August 1963.

Because of the time limits imposed by the Symposium held at this Library this week end, Dr. Lawrence has been unable to attend personally to incoming mail. You should receive his reply within two weeks time.

Sincerely yours,

Esther L. Frommer

Esther L. Frommer
Admin. Sec.

September 4, 1963

Dr. G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh, Penna.

Dear Dr. Lawrence:

I know how busy you are and wonder what progress has been made in the leaf identifications on the balance of items you have. I certainly hope that the list I sent you was helpful. I am writing this entire matter up at present and wanted to include your botanical material as soon as it is ready. An appropriate acknowledgment, of course, will be made.

I look forward to hearing from you and appreciate, so much, your cooperation.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

12 September 1963

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Missouri

Dear Mr. Newman:

On Mr. Margadant's return from vacation he has spent the better part of a day endeavoring to identify the plants represented on the pieces of Colonial and early American currency. Subsequently he and I went over his findings and collectively agree on the list as attached.

We do not find the earlier reference that you gave us to the Breintnall book to be relevant to the situation in hand, since it predates it by about twenty years and nothing in it could be assumed to be the same plants whose leaves were collected and pressed and used on the currency now under study. Where the leaves are of the same plant we consider it to be merely happenstance.

With this letter, and the enclosed list of identifications, I enclose the pieces of currency identified below and which agree with the list signed and provided you when you were here in May.

Identifications of leaves on Continental and U.S. Currency

Date	Denomination	Serial No.	Leaf Identification
Continental Congress:			
17 Feb. 1776	$1	38728	The 2 smaller may be Salvia officinalis (sage)
			The large 3-lobed is probably Ambrosia trifida (Giant ragweed)
2 Nov. 1776	2	70249	The 2 lower leaves appear to be a species of Corylus (Hazelnut, Filbert)
same	3	36277	Seemingly the wings of maple fruits (Acer). [Serial no. verified under ultra violet light.]
same	4	39988	The smaller imprint (lower right) seems to be portion of maple fruit wing.

Cable: HUNTBOTLIB PITTSBURGH *Telephone* 621-4619 *Area code* (412)

Date	Denomination	Serial No.	Leaf Identification
2 Nov. 1776	$5	3825 (not 3325)	Left: Stachys officinalis (Betony); right: Salvia officinalis (Sage)
22 July 1776	6	45213	Probably a species of Ranunculus (Buttercup)
same	7	30483	Same
9 May 1776	8	128500	Upper left, perhaps a pair of leaves of Lamium amplexicaule (Henbit)
11 Apr. 1778	4	196798	Lower 3-lobed leaf not identified. Probably a species of Ranunculus (Buttercup).
same	5	68354	These could be leaves or leaflets. The venation rules out Salix (willow) and suggests a member of the mint family. Identity unknown.
same	6	21724	Same
26 Sept. 1778	7	150566	Large upper leaf species of Vitis (Grape); small lower leaf: Salvia sp. (Sage)
11 Apr. 1778	8	Garrigues	(See note for #68354 above)
26 Sept. 1778	20	158269	Species of Ranunculus (venation arising at common origin supports this).
same	30	291747	(See note for #68354 above)
same	40	239990	A compound leaf and separated leaflets, suggestive of Daucus carota (Carrot).

Maryland:

1770	$ 1/9th	13218	Achillea millefolium (Common yarrow)
1770	1/6th	14805	Pinnae of ferns, perhaps Dryopteris sp.
1774	2/9ths	11562	Left: unknown; right: Rubus sp.
1774	1/3rd	6650	Left: Salvia?; right: Daucus (Carrot)
1770	1/2	13065	Left, not identified; right, not identified.

The Rachel McMasters Miller Hunt Botanical Library

Date	Denomination	Serial No.	Leaf Identification
1767	$ 2/3rds	11365	The central impression is that of a whorl of "leaves" of an alga, Chara.
1774	1	20	Leaf of Rubus (Blackberry) at right.
1774	2	13761	Leaf of Rubus at right; specimen at left unidentifiable.
1774	4	2253	Left, possibly portion of leaf of Daucus (Carrot), right, Salvia sp.?
1770	6	2691	Same as #1 above?
1774	8	9230	Same as #2 above.
Pennsylvania:			
1772	1 sh.	13497	Leaf of Fragaria (strawberry)
1772	18 d.	5727	Leaf of Rosa multiflora(?)
1772	2 sh.	13648	Leaflet of Fragaria
1772	2/6	12941	(Not botanical)
1769	5 sh.	1186	Left, unknown; right, Salvia
1775	10 sh.	3096	Leaf of Betula (Birch)?
1775	15 sh.	332	Leaf portion of a fern
1775	20 sh.	3884	Pinnules of Dryopteris spinulosa (fern)
1785	20 sh.	19145	Leaves of Viola (Violet)
1775	40 sh.	7671	Leaf of Ulmus (Elm)?
1769	3 £	Roberdeau	Leaf of Betula (Birch)?
1760	5 £	8706	Leaves of Corylus (Hazlenut) or of close affinity.

Your acknowledgment of receipt of the currency listed above and cancellation of the receipt provided you is requested. I trust that you find some of this study to be useful to you and we will be glad to learn of its publication and place of publication.

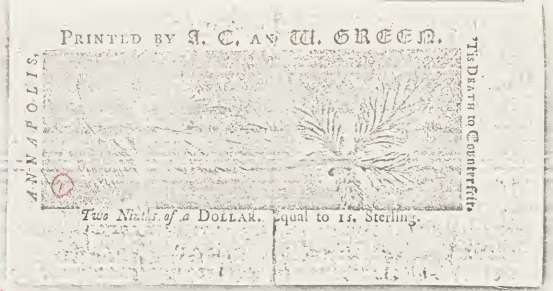
I has been a real pleasure to go over this material and to study it. I am sure that if we had access to a large herbarium where the actual specimens were present for consultation and comparison we would do a much better and more complete job. As it is, you have the best we can supply with the facilities available to us here.

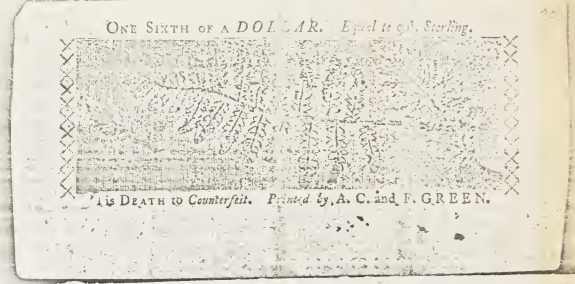
Very sincerely,

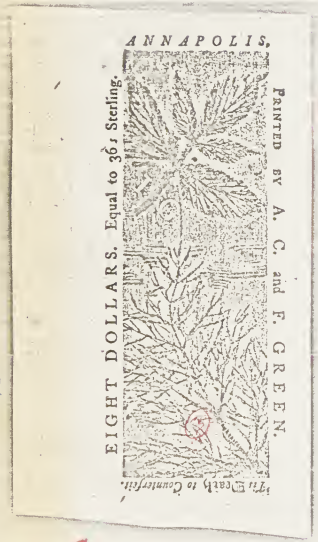
George H. M. Lawrence
Director

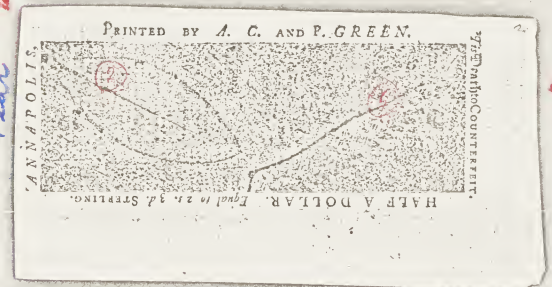
GHML:cl

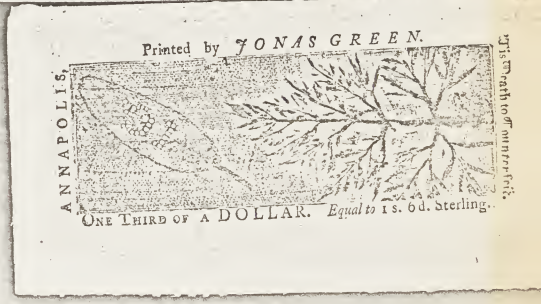
Enclosure: List of identifications
Currency


PRINTED BY J. C. AND W. GREEN.
ANNAPOLIS.
'Tis DEATH to Counterfeit.
Two Ninths of a DOLLAR. Equal to 1s. Sterling.

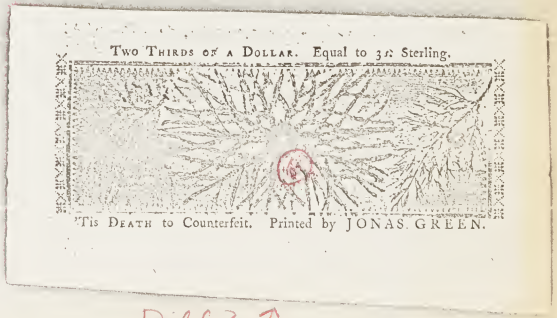

ONE SIXTH OF A DOLLAR. Equal to 6d. Sterling.
'Tis DEATH to Counterfeit. Printed by A. C. and F. GREEN.

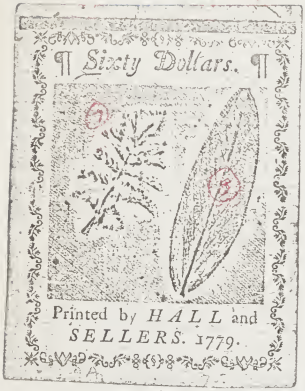

ANNAPOLIS.
EIGHT DOLLARS. Equal to 36s Sterling.
PRINTED BY A. C. and F. GREEN.
'Tis Death to Counterfeit.


PRINTED BY A. C. AND F. GREEN.
ANNAPOLIS.
'Tis Death to Counterfeit.
HALF A DOLLAR. Equal to 2s. 3d. Sterling.

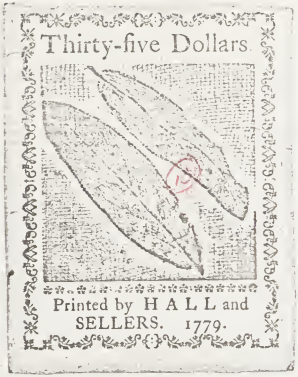

Printed by JONAS GREEN.
ANNAPOLIS.
'Tis Death to Counterfeit.
ONE THIRD OF A DOLLAR. Equal to 1s. 6d. Sterling.

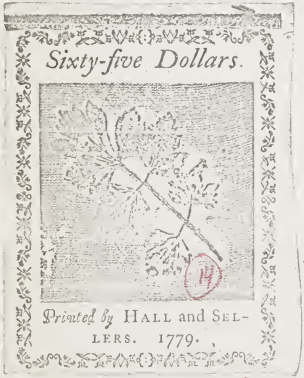
'Tis DEATH to Counterfeit. PRINTED BY JONAS GREEN.
ONE DOLLAR. Equal to 4s. 6d. Sterling.

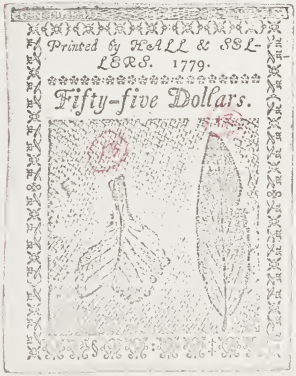

TWO THIRDS OF A DOLLAR. Equal to 3s. Sterling.
'Tis DEATH to Counterfeit. Printed by JONAS GREEN.

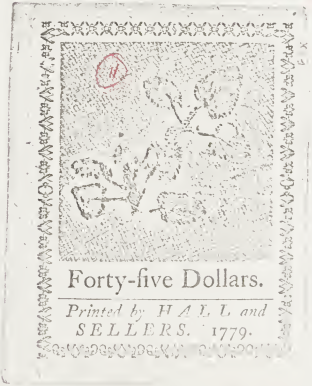

¶ Sixty Dollars. ¶
Printed by HALL and SELLERS. 1779.

FIFTY Dollars.
Printed by HALL and SELLERS. 1779.


Thirty-five Dollars.
Printed by HALL and SELLERS. 1779.


Sixty-five Dollars.
Printed by HALL and SELLERS. 1779.


Printed by HALL & SELLERS. 1779.
Fifty-five Dollars.


Forty-five Dollars.
Printed by HALL and SELLERS. 1779.

September 17, 1963

Dr. George M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Dr.Lawrence:

Receipt is acknowledged of your letter of September 12, 1963 with enclosures therein contained. I am exceedingly pleased at the completeness of your identifications as I fully realize how difficult it must be with respect to some of the items. I certainly thank you and Mr. Marmadant for the work which you have done and you will receive appropriate acknowledgment in the article I am writing. I am glad that you enjoyed doing the work as it is a novel project.

I will not forget your request for examples of this type of printing and will look forward to accomplishing that for you.

Kindest personal regards.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

September 17, 1963

Dr. Robert E. Woodson
Botany Department
Washington University
St.Louis, Missouri

Dear Dr. Woodson:

Enclosed are photocopies of certain leaf prints on the back of money. I am writing an article on this subject, the nature of which I will explain over the telephone.

What I am most anxious to do is to see if you can identify some of the leaves which my friends at the Hunt Library have not been able to identify. I have indicated, by a red arrow, those which remain unidentified. These are all life size.

I am enclosing a copy of the letter from the Hunt Library which gives you some idea as to the amount of work which has already gone into this matter. Can you help me?

Sincerely yours,

ERIC P.NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

Woodson comment

Like = fingerprints

1739

don't have staple

swallow + blackberry

✓ Maryland ft. has over 9 pencil words which are artifacts?

✓ Correct alg. to drill (

✓ #200 Cont. has impact holes from nuts of hornbeam which were removed

#8

✓ #40 all carrots

WASHINGTON UNIVERSITY
ST. LOUIS 30, MISSOURI

THE HENRY SHAW SCHOOL
OF BOTANY

5 October 1963

Eric P. Newman Numismatic Eduction Society
6450 Cecil Avenue
St. Louis 5, Missouri

Dear Mr. Newman:

I have given your leaf prints another twirl, and although I still do not claim to be infallible I come up with some rather plausible guesses:

1 - Hops (Humulus lupulus)
2 - Pear (Pyrus communis)?
3 - Dill (Anethum graveolens)
4 - Cherry or apple ?
5 - (imprint very poor)
6 - involucre of dill or carrot
7 - Poison hemlock (Conium maculatum)
8-10-12 - either sage or willow?
9-11 - Parsley (Pteroselinum crispum)
13 - mutilated leaf
11 - Ground ivy (Glecoma hederacea)?

I enjoyed your visit very much, and hope that I may be of help.

Sincerely,

Robert E. Woodson, Jr.

October 10, 1963

Mr. Robert E. Woodson, Jr.
Henry Shaw School of Botany
Washington University
St. Louis 30, Missouri

Dear Mr.Woodson:

I am absolutely delighted with your contribution to the identification of the difficult leaves which I presented to you. You did so well that I feel compelled to ask you to work on one or two more, pictures of which are enclosed.

The #3 and the #4 piece are described by the Hunt Library as the wings of maple fruits. I believe we agreed that the #4 was definitely that but I did not remember what you said about the #3 piece.

The #2 item seems to have hazelnut leaves as the lower two pieces and we were wondering what the upper left piece could be in view of its two oval openings near the center.

Would you let me have your thoughts on these items.

I will continue to be very grateful.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

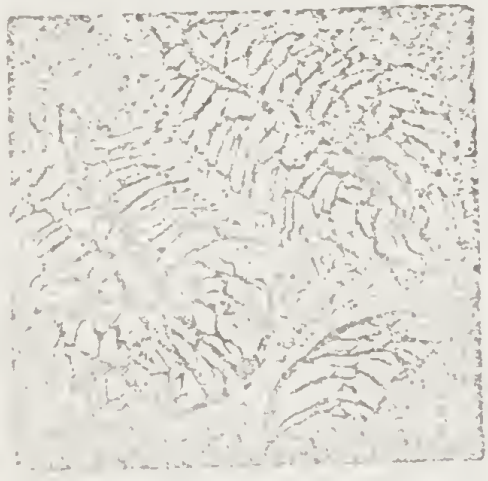
THREE DOLLARS.

Philadelphia: PRINTED BY
Hall & Sellers. 1776.

† ONE DOLLAR. †

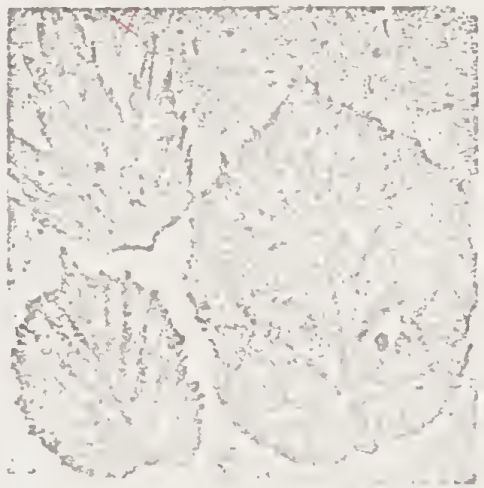
PHILADELPHIA:
Printed by HALL and SELLERS. 1776.

†FOUR DOLLARS.†



Printed by *Hall & Sellers*,
in *Philadelphia.* 1776.

¶ TWO DOLLARS. ¶



PHILADELPHIA:
Printed by HALL *and* SELLERS. 1776.

WASHINGTON UNIVERSITY
ST. LOUIS 30, MISSOURI

THE HENRY SHAW SCHOOL
OF BOTANY

13 October 1963

Mr. Eric P. Newman
Eric P. Newman Numismatic Eduction Society
6450 Cecil Avenue
St.Louis 5, Missouri

Dear Mr. Newman:

The impressions on the $3 and $4 notes surely are of skeletonized leaves and fruits of trees. (The veins only remain, the thin mesophyll tissue having been eaten or rotted away by the action of insects or bacterial action as one may frequently see in nature.) Identification of such fragments is extremely difficult, except in such objects as the prtion of the maple "key" wing in the lower right corner of the $4 note. I would guess that the skeletons in the $3 note may be from sections of elm leaves.

In the $2 note, the two perforations of the 3-lobed leaf in the upper left corner almost certainly must be an artifact - punctures deliberately made. The leaf may be a raspberry or blackberry leaf (Rubus sp.)

Sincerely

Robert E. Woodson, Jr.

WASHINGTON UNIVERSITY

ST. LOUIS 30, MISSOURI

THE HENRY SHAW SCHOOL
OF BOTANY

27 Pctober 1963

Dear Mr. Newman:

I'm sorry I've kept these for so long. I've been unusually busy.

$3: portions of skeletonized leaves (Elm?) and fruits (Maple?)

$8: upper left: involucral leaves of Henbit (Lamium amplexicaule);
center and upper right: leaf of Buttercup and segment of outer
basal lobe of same, with section of subtending petiole (possibly).

Robert E. Woodson, Jr.

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

22 November 1963
(dictated 15 November 1963)

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Missouri

Dear Mr. Newman:

In the recent past it was our pleasure and privilege to study pieces of colonial paper currency supplied by you for the purpose of identifying leaves printed thereon. A situation has now arisen that puts the shoe on the other foot.

I have been asked to give a Franklin Day Dinner address on the subject of Franklin and Botany. Immediately the thought has come to mind of working up a paper for the occasion on the subject of nature printing and tying it to Franklin through the linkage of colonial currency. Before accepting I write to inquire of two things of you: (1) Is there any possibility that your book will be ready by that time so that copies can be shown to the audience and that they be told of your studies? (2) Would you have any kodachromes of the currency pieces that might be put on the screen to show these people? In the event that you might have would you be willing to loan them to me or allow me to have copies made for the purpose? In the event that you have no kodachromes would you either loan me selected pieces of currency for the purpose of photographing or have slides made for me at my expense in St. Louis? I would be very pleased to talk on this subject but to do it effectively I would need to show the audience slides of a dozen or so items.

Your advice on the status of your work and the possibility of my having kodachromes is invited.

Most cordially yours,

George H. M. Lawrence
Director

GHML:ps

P. S. Since last writing to you I have come across two references on nature printing, both of which may be known to you, and which I pass on for such use as you care to make of them. Xerox copies of these two works have now been acquired here at this library. They are: Bradbury, Henry. Nature-printing: its origins and objects. 28pp. Bradbury & Evans, London, 1856. Martins, Ernst Wilhelm. Neueste unweisung Pflanzen nach dem Leben abzudruken. 81 pp. Winklerschen Schriften, Weztar, 1785.

Cable: HUNTBOTLIB PITTSBURGH *Telephone* 621-4619 *Area code* (412)

November 27, 1963

Dr. George H. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Dr.Lawrence:

Pursuant to our telephone conversation and your letter of November 22, 1963, I am glad to prove the theory that "turn about is fair play".

Under separate cover I am forwarding a photocopy of my article which will appear February 1, 1964. You may certainly use it in any manner you wish.

Under separate cover I am also forwarding additional numismatic material on Franklin in the December, 1956 Numismatist.

In the next couple of days I will mail you negatives of a large group of nature prints which I understand you can blow up into 8x10 and that this will satisfy your purpose.

I am delighted that you acquired photocopies of the two books on Nature Printing and I understand that the Bradbury does not mention anything concerning Franklin's invention and that you are having the Martins manuscript read to determine whether it has any mention of Franklin's Nature Printing method.

You are also going to send me an item by mail which you indicate has some vague reference to Franklin's type of Nature Printing.

It is a pleasure to be of help.

Sincerely yours,

EPM/atb

ERIC P. NEWMAN

November 29, 1963

Dr. G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Dr. Lawrence:

I am enclosing herewith fourteen negatives of nature prints and a few of the contact prints which I had left over from my illustrations. If you are going to have 8x10 prints made from some of these I would suggest that where there are two notes on one negative that only one note be blown up to the large size. In some cases this will necessitate shielding part of the background or part of another note which the photographer can readily do. You may also merely wish to have contact prints made and to shield off undesirable appearances. Please return all the foregoing to me after they have served your purpose.

The contact prints are, in many cases, poor, as I had new prints made for the illustrations because they were not good enough prints. If the print turned out satisfactorily I did not have it redone so you have received the culls.

It is not necessary for you to make any 8x10 prints for me, but, if you make additional contact prints, I have a few people who would enjoy having them.

I hope, however, that the pictures in the article are good enough to make the points clear.

Sincerely yours,

ERIC P. NEWMAN NUMISMATIC
EDUCATION SOCIETY

EPN/atb

The Rachel McMasters Miller Hunt Botanical Library
Carnegie Institute of Technology Pittsburgh 13 Pennsylvania
GEORGE H. M. LAWRENCE, *director*

Dear Mrs. Neuman,

Enclosed is the xerox copy of pp. 219-222 of Vol. 2 of our catalogue, requested by you last Friday.

Cordially yours,

G. H. M. Lawrence

13 May '63

Henry Bradbury — On Nature Printing.
Royal Inst — Proc II 1854-8 pp 106-118.

Claus Nissen
Die Botanische Buchillustration
(Stuttgart 1951)

Does not mention Franklin, Beintnall or any other American except Nessel in the early period.

Willem Margaedant

Preface to Thomas Moore
"The Ferns of Great Britain and Ireland. ——
Nature Printed by Henry Bradbury" (London 1855)
describes nature printing. (Better steele + soft metal) exact copy of plant in copper
(electrotelluryy) ~~is~~ Green is printed — known in London.
John Lindley writes preface for above.

Catalogue of Botanical Books — the Collection of Rachel McMasters Miller Hunt (Pittsburgh 1961)
Vol II Part II p. 217
Johann H. Kniphof Botanica in originali, seu Herbarium (Erfurt 1748 closed 1757)
p. 217 considers plants in herbal books, plants dried between paper + rubbed with mineral acid.
Vol 2 Hannover in 1767 by Hessel.
1733 first book in nature printing. then Kniphof unbekannt
Refers to
Conrad Fuchs "Zum Handel Johne Naturselbstdruck"
Botanisches Jahrbuch 1932 pp 186-214

——— ——— ——— ——— ———

Wilfrid Blunt The Art of Botanical Illustration p. 138-142
London 1950
Walter Hadley
Compton, near Guildford, Surrey, England

Dr Claus Museum, Natur- Cedar Avenue 11
Mainz Germany

Gordon Dimitmore "Flora Print" to 9th the 18th & early 19th Century Washington D.C p 212-4, p 45.
Henry Bradbury "Nature Printing and its Progress" (London 1856)

Benjamin Dayton Jackson "The History of Botanic Illustration" in Transactions of Hereford. Nat. Hist. Soc., Vol. 14 (1903-5; 1906 published)

Someone is adding misspellings

Encyclop Brit

Printing p. 504

Stereotyping — taking mould of form in plaster of paris (gypsum) or papier mache and pouring molten metal over the face in a cast box.

William Ged, Edenburgh gunsmith, 1700-25 used plaster of paris over page of type. In 1730 he made plates for a bible in Cambridge but the plates were spoiled.

Brushing with oil for "mat" or matrix

Prof Moritz Jacobi (German da worked at St Petersburg) experimented with galvanic process about 1837 electrotelegy

Beeswax or "prepared lead"

Invented electrotype 1837

Electrotyping

Tenaplate is wax coating with metal or resin

Die Entdeckung des Naturselbstdruckes
(The Discovery of the Natural Printing Process)
Aloïs Auer (Vienna 1854) p. 72

"He performs with soft lead what has long been done with gutta percha. The soft plate is afterward copied, by means of the galvanoplastic apparatus, in copper.

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

10 December 1963
(Dictated 2 December 1963)

Mr. Eric P. Newman
6450 Cecil Ave.
St. Louis, 5, Missouri

My dear Eric:

Please accept my deepest gratitude for the extreme generosity represented by the material now in hand and received from you concerning Benjamin Franklin and colonial currency. Mere words are inadequate to express my indebtedness and perhaps through the course of time actions may take their place.

I dictate this on the eve of my departure for a couple of weeks in California, during which time I am having the prints made from the negatives you generously provided. Unless you want them returned at once when I get back, I would prefer to hold them until after the Christmas holidays and the crush of mails. The same holds for the other materials. A set of contact prints is being made of each negative for your files.

Under separate cover I send you our copy of George L. McKay's Early American Currency, with its introduction by W. A. Dwiggins, and published by the Typophiles, New York, 1944. Today I am having one of our staff members look over the German article and will send you a copy in a day or so.

Most sincerely,

George H. M. Lawrence

George H. M. Lawrence
Director

GHML:hbe
(Dictated but not signed)

USC - McKay's - Early American Currency
German article

December 12, 1963

Dr. G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Dr. Lawrence:

I urgently need an identification of the enclosed leaf. Will you have it identified and let me know as soon as possible.

Thank you, very much, for the Chap Book. It so happens it is a simultaneous print of an article I have already cited in my book.

I now look forward to hearing from you as to whether the 1785 German publication has anything on nature printing which I do not already have.

Kindest regards.

Sincerely yours,

ERIC P. NEWMAN

EPN/atb

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

16 December 1963

Mr. Eric P. Newman
5450 Cecil Avenue
St. Louis 5, Missouri

Dear Mr. Newman:

On my return to this office this morning I replied by day-letter to your letter of 12 December concerning the identification of the leaf on the 80S piece of currency, of which you sent a xerox copy. It appears to be that of Sage, Salvia pratensis. There are many species of Salvia that have the common name of sage, of which this is one. We do not have, as you know, actual plant specimens, for purposes of comparison and the determination was made through comparison with good illustrations in the literature.

As I reported in the day letter just sent to you, a survey of the contents of the booklet by Martin (1785) is a contemporary and rather elaborate presentation on the techniques used by Kniphof in his work In Botanici originali ... with which you are familiar. We can find nothing in it where any reference was made to the application of the process in countering possible counterfeiting of paper currency. If, for your records, you ever want a xerox copy I can have one made for you.

With kindest regards and best wishes for the Season,

Most cordially yours,

George H. M. Lawrence
Director

GHML:ps

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM
W. P. MARSHALL, PRESIDENT

SF-1201 (4-60)

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

SF161 PB231

P PGB211 DL PD PITTSBURGH PENN 16 1156A EST

ERIC P. NEWMAN 6450 CECIL AVENUE

STL

I IDENTIFY LEAF ON 805 CURRENCY ITEM AS SALVIA PRATENSIS (SAGE). EXAMINATION OF GERMAN PAPER BY MARTIN SHOWS IT TO DEAL ALMOST WHOLLY WITH KNIPHOF'S NATURE PRINTING TECHNIQUES INCLUDING REPRODUCTIONS OF CORRESPONDENCE WITH KNIPHOF AND NOT AT ALL WITH CURRENCY APPLICATIONS

GEORGE LAWRENCE

(22).

February 24, 1964

Dr.G. M. Lawrence
Hunt Botanical Library
Carnegie Institute of Technology
Pittsburgh 13, Penna.

Dear Dr. Lawrence:

I just read in the newspaper that you were coming to St. Louis to give advice on the Botanical Garden.

My wife and I would both be delighted to see you and if you could come to dinner, or make our house your headquarters, it would be delightful.

I will also show you the first installment of the Nature Printing article which was published on February 1. A second installment will be published on March 1.

My kindest personal regards.

Sincerely yours,

ERIC P. NEWMAN

EPN/atb

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

SF-1201 (4-60)

SYMBOLS

DL = Day Letter

NL = Night Letter

LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

1000A CST FEB 26 64 SF077 PB095

P PGB074 PD PITTSBURGH PENN 26 1038A EST DUPLICATE OF TELEPHONED TELEGRAM

ERIC P NEWMAN

6450 CECIL AVE STL

YOUR KIND INVITATION APPRECIATED. GARDEN BOARD HAS MADE FULL ARRANGEMENTS FOR FRIDAY AND SATURDAY. STAYING AT CHASE. WILL PHONE YOU FRIDAY BEFORE DINNER HOUR

GEORGE LAWRENCE HUNT BOTANNICAL LIBRARY

(47).

Pa 6850

Emp 7 mar 1300

PB 1027 47m

The Rachel McMasters Miller Hunt Botanical Library

Carnegie Institute of Technology Pittsburgh 13 Pennsylvania

GEORGE H. M. LAWRENCE, *director*

3 July 1964

Mr. Eric P. Newman
6450 Cecil Avenue
St. Louis 5, Missouri

My dear Eric Newman:

Please forgive me for my tardiness in responding to your recent letter, reminding me that I had not returned the negatives of colonial and early American paper currency, and advising me of the reprints that you so generously provided me.

The negatives are returned to you herewith and I trust that they arrive in the same excellent condition in which they came to me. I made prints of some of them to illustrate different kinds of leaves, but had no need for a complete set.

The material that you sent earlier, including the typescript copy of your paper served me marvelously when preparing a talk to be given here last February, on Franklin's birthday. It was presented to a small group of men who call themselves the Pittsburgh Junta (the difference in spelling from Franklin's is deliberate) and who get together monthly to study some facet of Franklin's contributions. There is no publication involved, although I most certainly gave you full credit for all the material that I used. It would have been much better had you been able to give the talk yourself. No slides were made, since I passed around mounted prints prepared from your negatives.

I have read the article and congratulate you for the clarity of its presentation. I appreciate deeply your providing me with the three copies. The abundance of documentation provided in the footnotes and in the body of the paper itself will prove to be a most useful compilation to me.

I dictate this letter on the eve of departure for about seven weeks in Europe on a book-hunting quest. Again, my many thanks for all your helpfulness and my apologies for having procrastinated in getting the negatives back to you. I do hope you will find them all in perfect condition and that the loan is returned to your satisfaction.

Very sincerely,

George H. M. Lawrence

George H. M. Lawrence
Director

GHML:ps

Enc.: Negatives

Cable: HUNTBOTLIB PITTSBURGH *Telephone* 621-4619 *Area code* (412)

Ctf in Col. Penna (Scott)

References to leaf design

f.	Colony	Issue	Denom	Botan. dent
90	Pa	8/10/39	10 sh	Rose + Sage
98	N.J.	4/8/62	£3	Sage
104	N.J.	4/16/62	30 sh	Sage
108	N.J.	6/xx/36	12 sh.	Sage

Catalogue of Botanical Books in the Collection of Rachel McMasters Miller Hunt (Pittsburgh 1961) Vol II Part II p. 216

1748

532 LÉMERY, Nicolas (1645-1715), French physician and pharmacist.

Pharmacopée universelle. Quatrième éd. Amsterdam 1748. *Mediaan* 4°.

The first edition was Paris 1697: copies at BN and DAFM.

1748

533 LINNAEUS, Carl (1707-1778), Swedish naturalist.

Hortus Upsaliensis. Amsterdam 1748. *Median* 8°.

CAROLI LINNÆI | *Archiatri Regii; Med. & Bot. Prof. Reg. Ups.* | *Hort. Acad. Præfect.* | HORTUS | UPSALIENSIS, | *Exhibens* | *PLANTAS EXOTICAS,* | Horto | Upsaliensis Academiæ | a sese illatas, | *Ab anno* 1742, *in annum* 1748, | *Additis.* | Differentiis, Synonymis, | Habitationibus, Hospitiis, | Rariorumque Descriptionibus, | *In Gratiam Studiosæ juventutis* | [fleuron orn.] | *Proſtat AMSTELÆDAMI,* | Apud. J. WETSTENIUM, | 1748.

Collation: 8°: π1 (horiz. chains))(⁴ A-X⁸ Y⁴ Z1 (D5 as 'A5'); [x] 1-306 [40] (180 as '380'). π1: title, v□.)(1: dedication to Prince Adolf Fredrik, signed 'C. Linnæus.')(2: preface.)(4ᵛ: 'AUCTORES.' A1: text, beginning with '*CLASSIS I.* | MONANDRIA | *MONOGYNIA.*' U2: indexes. X3ᵛ: 'MACELLUM SVECICUM.' and other lists. Z1: index to plates; addenda. Z1ᵛ: errata. RTs vary.

Plates: '*Tab.*' I-III, foldout engravings, of *Mimulus* [*ringens*], *Celsia* [*orientalis*], *Tussilago* [= *Gerbera Anandria*]; pl. 2 signed '*Bergquiſt Sc.*'; pl. 1 12.7 x 7.4"; keyed to pp. 176, 179, 259, and indexed at Z1.

Paper: *Median,* mainly Swedish(?), unmarked. Leaf 7.7 x 4.8".

Type: *Mediaan* (*cicero*) roman 41+. Dedication: *augustijn* (*mittel*) italic leaded 55. Preface: *augustijn* (*mittel*) roman 47.

Binding: Calf with blind fillets; gilt floriated spine with red label; 'LINNÆI | FLORA | SUECICA'; marbled endpapers; red edges. Heraldic bookplate showing crowned shield with three circles in chief, supported by eagles, with ribbon

motto: 'VIRTUTE NON AURO', signed '*Dijon Fontanelli 1809.*' Bound with and after Linnaeus' *Flora Suecica* (1745).

References (S = Stockholm; A = Amsterdam): Pritzel 5423, Haller, Hulth, Soulsby 425, Brunet, Grässe; BM(NH) (S), BN (S), DA (S), MH-A (S), MBHo (S), Kew (S), Lind. (S), Linn. (S, A); Sandberg 82 (S). *Copies* (NUC +): CtMW (S), CtY, CU, DLC (S), ICJ (S), MiU, NIC (A), NN, NNBG (S), OO, PPAmP, PPAN, PPiCM (S).

Notes: This volume does honor to the exotic plants grown in the University city. Linnaeus lists 110 plants which he had introduced into the Botanical Garden at Uppsala. Noteworthy are the indexes, including one of plants used as food in Sweden. For a history of the Botanical Garden see the Linnaean thesis *Hortus Upsaliensis, quem ... subjicit Samuel Nauclér* [1745] 4° (Soulsby 1424); M. B. Swederus, *Botaniska Trädgarden: Upsala* (1877); H. O. Juel, *Hortus Linnaeanus* (1919); also the modern account by Robert E. Fries, in *A Short History of Botany in Sweden* (Uppsala 1950).

Soulsby calls this Amsterdam issue a 'pirated edition', Hulth a 'fausse édition'. As the volume is apparently the same as the one published in Stockholm by Laurentius Salvius, except for a substitute title, it is not a different edition but a special issue. And the fact that numerous copies exist with the Amsterdam imprint suggests the possibility of an arrangement with the Swedish publisher. In any case, Wetsten of Amsterdam may have taken so large a number of copies for sale in Holland that he considered it worth the trouble and expense of canceling the Stockholm title in favor of one saying the book was on sale in Amsterdam at his shop. The horizontal chains in the Amsterdam cancel-title call immediate attention to the fact of reissue. The Stockholm title has vertical chains (DLC copy). Though this title designates the volume as Vol. I, no Vol. II was issued.

Prince Adolf Fridrik, the dedicatee (1710-1771), became King of Sweden in 1751, whereupon Linnaeus dedicated to him and his queen the great *Species plantarum* (1753) 8°: see Hunt 548.

1748-51

534 KNIPHOF, Johann Hieronymus (1704-63), professor of medicine and botany at Erfurt.

Botanica in originali, seu Herbarium vivum. MS with self-printed plates. Erfurt 1748, changed to 1751. *Bienenkorb* F°.

[MS title within compartment of self-printed passion-flower and composites] *Joh. Hieron. Kniphofii* | *Anatom. Chir. A Botan. P. P. O. Fac. Medic.* | *Asf. Acad. Caes. Nat. cur.* [*Coll.* crossed out] | *Adj. et Bibliothcc.* [inserted between lines] | *Botanica in originali,* | *ſcu* | *HERBARIVM VIVUM* | *in quo* | *tam indigenæ, quam exoticæ* | *Plantæ* | *Tournefortii, Rivini et Ruppii* | *methodo* | *peculiari, nova, operosaq; enchiresi* | *atramento impresſorio obductæ* | *ectypum eleganter ſuppeditant* | *Centuria I. II. III. IV. V. VI.* | *studio et opera* | *Joachimi* [*Joh. Mich.* crossed out] *Funckii.* | ═══ | *Erfurthi CIↃ IↃ CCLI.* [*XLVIII.* corrected to *LI.*]

Collation: F°: $\pi 1$ 2π-$3\pi^2$. $\pi 1$: title, v□. $2\pi 1$: self-printed floral compartment □, v□. $2\pi 2$: self-printed floral compartment □, v□. $3\pi 1$-2^{rv} □. No text.

Plates: $\tau 1$-94 94^a 95-504 506-590 (folio sheets made up in 2s, 4s, and 6s, with occasional replacements and insertions): 590 self-printed plates; numbered in red in lower right corner. Titled in MS, with references to Bauhin, Rupp, *et al.* and some corrections by a later hand; unsigned. Plant-impressions 6.6″ ($\tau 1$) to 12.3″ ($\tau 60$) and 13″ ($\tau 443$) high. After prelims., on rectos.

Typical plates:

$\tau 16$ Tanacetum officinarum [= vulgare]
55 Tragopogon pratensis
56 Cichorium sylvestre [= Intybus]
65 Tagetes [erecta]
70 Valeriana sylvestris [= officinalis]
87 Dipsacus sativus [= sylvestris]
140 Lycopsis palustris [= ?arvensis]
167 Nepeta [Cataria]
176 Adhatoda Zeylanensium [= Justicia Vasica]
201 Digitalis purpurea
203 Hyoscyanus ... niger
295 Phaseolus vulgaris
316 [Cercis] Siliquastrum
328 [Impatiens] ?Balsamina
394 Geranium Robertianum
397 G. cicutae folio moschatum [= Erodium cicutarium]
400 G. africanarum arborescens ibisci folio [= Pelargonium cucullatum]
423 [Cypripedium] Calceolus
425 Helleborine angustif[olia] palustris sive pratensis [= Serapias = Epipactis palustris]
500 Cannabis sativa
502 [Humulus] Lupulus
504 Ricinus vulgaris [= communis]
529 Juniperus vulgaris [= communis]
565 Polypodium vulgare

Paper: Probably *Bienenkorb*, German, marked Horn in angular surround (prelims.). Plates: several stocks:

Wheel ═ Crown | J P with cordeliere
Crowned Shield with Cock (?) ═ ASS (in cartouche)

Main mark $\tau 1$ ...
$\tau 71$ ═ 72

Hercules with Club (topped with fleuron)	499 . . . , clear in 538 550
Unmarked, cream	570 . . .
Unmarked, gray	591 . . .

Leaf 13.4 x 8″.

Binding: Half vellum; light brown marbled boards; spine lettered '*Jo. Hieron. Kniphofii* | *Botanica in originali* | *seu* | *Herbarium vivum* | *Erfurthii 1751.*'; red edges. Front fly torn out. Signature '*August Thienemann* | *Gotha*' in red ink and the name alone in black at top of front pastedown; with 'August | Thienemann' in an oval handstamped (inverted) in violet just below.

References: Pritzel 4752 (12 centuriae, 1186 pls., 1747), Nissen 1076n (copy at Erfurt: 12 centuriae, 1186 pls., 1748-49), Ernst Fischer in *Gutenberg-Jahrbuch 1933* p. 198 n (1748-49); Blunt p. 141 (1747). (Correct date of Erfurt copy: 1747-48.)

Preliminary eds. of 1733-36: Nissen 1073-75, Dunthorne 169, Haller, Fischer 1-6, DA.

Printed ed. of 1757-67, incl. index: Pritzel 4752, Nissen 1076, Dunthorne 170, Haller, Fischer 7 (1200 pls.), Grässe (1254 pls.); BM, BM(NH), BN, DLC, MH-A (1200 hand-colored pls.), MBHo (1200 colorplates), Kew. *Copies:* ICJ, NNBG. Some (like MH-A) do not have the index.

Notes: This volume, combining self-printed or 'nature-printed' plates with a manuscript titlepage and manuscript captions on the plates, represents a late preparatory stage in the making of the fully printed form of Kniphof's *Botanica in originali* (1757-67) F°, perhaps the most successful book in the history of this manner of preserving the lineaments and character of plants.

There seem to have been various early attempts to obtain useful impressions of flowering plants through smoking them with lampblack, placing them between sheets of paper, and rubbing with care. Such a method was used in America around 1707 by a Mr Hessel. In 1728 Professor Kniphof of Erfurt formed a working partnership with the printer Johann Michael Funcke of the same place for the experimental preparation of plates through the use of printer's ink and a flat press in place of lampblack and smoothing bone. Five years later they brought out their first *Botanica in originali, Das ist: Lebendig Kräuter-Buch*, Vol. I showing 200 *Officinalia*, Vol. II 100 *Vegetabilia*, 100 *Gartengewächse*, and 100 *Blumengewächse*, each with *Planzenverzeichnis* but without text (Fischer 1-4: copy at Erlangen). A second edition (1733-34[-36]) includes 200 *Pharmaceuticae* and 200 *Blumen-, Baum-, und Küchen- Gewächse*, with 38 further plates in some copies, and with an explanatory text (Fischer 5-6: copies at Erfurt, Erlangen, Weimar, Vienna, and in Fischer's collection). For these see Ernst Fischer, 'Zweihundert Jahre Naturselbstdruck', *Gutenberg-Jahrbuch 1933*, pp. 186-213, with list at p. 196 ff and Kniphof

plate of 1734 at p. 192. The Department of Agriculture Library, Washington, has one part dated 1733. These were small printed and published editions.

The present volume of 1748-51 shows nature-printing in a further stage of development, and plates almost equal to those in the well-known edition of 1757-67. The volume consists merely of a manuscript titlepage within a nature-printed border, other bordered and blank preliminary leaves, and 590 plates consisting of a self-printed plant with polynomial titles and references in ink below. Though the manuscript titlepage mentions six *centuriae* only, one suspects that a companion volume exists somewhere with around 600 more plates. The only similar copy appears to be one at the Stadtbibliothek, Erfurt, which Pritzel and Nissen report as containing twelve *centuriae* and 1186 plates. Fischer merely mentions it in a footnote (p. 198), as 'Eine Sammlung sehr schöner Abdrücke, die aber nicht in den Buchhandel gekommen ist und deshalb hier nicht eingereiht werden kann.'[1] Presumably Kniphof and Funcke prepared only a few copies of this 'manuscript' edition. Despite rumors, there is no copy at Kew. Though others may turn up in the Gotha-Erfurt-Weimar region, only the Erfurt and the Hunt copies are known—and the latter includes but six *centuriae* and may differ in its plates. For each impression of a plant in nature-printing tends to be different.

An examination of the 'printed' edition at the Massachusetts Horticultural Society Library and a direct comparison of the Hunt volume with the 'printed' volumes at the New York Botanical Garden Library has shown that the two editions are distinct in content. As it is obvious that only a few impressions can have been taken from one specimen or group of specimens, this must be so; yet it is startling to find whole sections, as of grasses, not duplicated or paralleled in the later publication. This means that the manuscript edition deserves study for its early representations of plants growing in a German garden. When taxonomists of the New York Botanical Garden examined the volume of 1748-51, they pointed out that it depicts various species, such as some *Geraniaceae*, as growing in Germany at an earlier time than had been previously recorded.

The complete printed edition was issued part by part between 1757 and 1767, each *centuria* and the index with its own titlepage. Gordon Dunthorne gives 1758 as the date of *Centuria* IV, 1759 as that for VI, 1760 for VII, 1762 for IX, 1763 for I-III V VIII X, 1764 for XI-XII, 1767 for the Index. But apparently the first forms of some parts were dated 1757. The British Museum dates its complete copy 1757-67, its second copy 1763, 1757-64 (without index), with note: '*Pt.* 1, 2, 4, *and* 5 *only are of the new edition. The others are duplicates of the respective parts of the preceding, but with some variations.*' The Bibliothèque Nationale dates its copy 1763-64; the Library of Congress 1758-64; the Massachusetts Horticultural Society 1759-64. It is evident that the bibliography of this book needs much study.

[1] The Wissenschaftliche Bibliothek der Stadt Erfurt has kindly furnished a film of specimen plates and of the two manuscript titlepages; these differ from the Hunt title but slightly in wording, but bear the dates 1747 and 1748.

The printed edition was brought out, not in Erfurt by Funcke, but in Halle by Johan Gottfried Trampe. Its titlepage indicates its authorities, not as Tournefort, Rivinus, and Rupp as in the Erfurt edition (both copies), but as Linnaeus and Christian Gottlieb Ludwig. At much the same time Ludwig was bringing out his *Ectypa vegetabilium* (1760[-64]) F°, with 200 *Naturselbstdrucke*, printed likewise by Trampe but issued in Leipzig by Breitkopf (Nissen 1252, Dunthorne 188, Hunt 569). The change of authorities on the Kniphof titles emphatically marks the revolution in botany at midcentury, much as did Philip Miller's shift to the Linnaean system (with reservations) in the seventh edition of *The Gardeners Dictionary* (1759) and to Linnaean binomials in the eighth edition (1768). It is difficult to name anyone other than Kniphof who used the Linnaean binomials in a book with plates just four years after *Species plantarum* (1753).

The copy of the Linnaean (Halle) edition at NNBG has two plates both in uncolored and in colored form. These serve to show the advantages and disadvantages of color (which tends to obscure the leaf-veining and other details)—and also the fact that no two impressions in nature-printing are likely to be the same.

Johann Michael Funke began to issue the Tournefortian (Erfurt) edition in 1747, according to the manuscript titlepages of the two-volume copy at Erfurt. Yet the Hunt copy is dated MDCCXLVIII, with '*XLVIII.*' (possibly originally '*XLVII.*') crossed out and replaced by '*LI.*' At the same time (presumably) the given names of the printer were struck out and a new one written in, so that the line now reads '*Joachimi Funckii.*' Perhaps this means that Johan Michael Funcke died between 1748 and 1751 and was succeeded by a son or brother. These changes (as well as the addition of the fourth line of the title) may correspond to certain corrections found in names and references written below; but more likely the latter were written in at different times. For instance, the names on τ399 and 400 (*Geranium* and *Pelargonium*) are switched, with no paleographic change, whereas the names on τ401 and 402 (further Pelargoniums) are corrected in a more flowing hand. Some other plates with corrections are τ432 440 448 458 479 480 484; and some with additions in the cursive hand are τ466 469 470 471 485. Such plates may deserve special study. Now and then someone has added a word or two in red crayon, as at τ401 to mark the beginning of the fifth *centuria*.

The plates are numbered in red ink in the lower right corner; except that the numerator missed the plate following 94 and skipped the number 505; so that his final total, 590, is correct. To indicate that these are assigned numbers in a collection of (manuscript) plates, I have placed the letter tau before them.

The foliation and collation of these plates can be made out, for the most part, through attention to the watermarks, countermarks, chaingrooves, rough sides, and occasional sewing-threads. Most of the volume is made up of folios in twos, with occasional fours and sixes. But the foliation in the two unwatermarked stocks at the end is so difficult to judge, particularly because the chains are obscure and a few leaves have been substituted,

that it seems unwise to set down here a detailed collation of the plate section. The collation of the preliminary leaves is easy enough; but what I have called leaves 2π1 and 2π2 are separated.

The titlepages reveal much of what is known of Kniphof. There is no entry in *Allgemeine Deutsche Biographie*, but he gets a paragraph in Michaud. He lived and died in Erfurt. He became a member of the academy of naturalists of his city in 1733, about the time he first published nature-printed pictures, and later became its librarian. From 1737 he was professor of medicine at the University of Erfurt (later suppressed), and from 1745 professor of anatomy, surgery, and botany. After Kniphof was named the genus *Kniphofia* (Moench 1794), a showy South African genus of the Lily family. The nature-printer's immortality is not after all a thing of dull gray, merely.

Opinions differ as to the quality of the plates. One's first impression may be of monotonous grayness, of dull silhouettes; and certainly some complex flowers do not fully reveal themselves; but often the effect is surprisingly realistic, as in some dried specimens; and frequently leaf-forms with their subtle veining and the fronds of ferns are reproduced better than they could be through any other method. The writer in Michaud says, 'Cet ouvrage, ... ne donnant point les caractères botaniques des plantes, est peu utile au naturaliste.' Dunthorne (pp. 43-45) notes that 'The fragility of the specimens used in printing must have been a constant source of difficulty while undoubtedly the necessity of frequent replacements requiring a large supply of specimens was an obstacle to the uniformity and success of an edition of any size.' Blunt remarks (p. 141): 'Some of these works illustrated by nature printing have considerable charm, especially where the process has been used to record grasses, ferns and delicately formed plants.' For further comment on this black art see Dunthorne pp. 45, 213-14 and Blunt pp. 138-42. The Hunt Collection includes a copy of Thomas Moore's *The Ferns of Great Britain and Ireland* (1855) F° or Brs, 'Nature-Printed by Henry Bradbury', acknowledged to be one of the finest sets of plates using the process, with effective greens and browns.

The paper used at Erfurt by Kniphof and Funcke includes several interesting marks. Most interesting is the Hercules or Savage mark. Labarre, *Nostitz* 534-42, reproduces nine marks of figures with clubs within small shields, all of the seventeenth century; also a large seated figure with club, who looks more like a Hercules, *Nostitz* 543 (of date 1692). Heawood offers one example, 1344 (undated), with uplifted club; and Churchill a similar mark, 511, and another, 510, with club resting on earth, as in Kniphof; but these are not dated. Labarre's notes suggest that such marks came from the region of Salzburg or Vienna.

As the inscriptions on the pastedown show, this copy of the Erfurt manuscript edition of Kniphof was owned by August Thienemann of Gotha. Perhaps he is the August Thienemann, born 1882, who wrote *Die Binnengewässer* (1925-—) and other works listed in BM(NH). Gotha is just 17 miles west of Erfurt.

1749

535 HALLER, Albrecht von (1708-1777), Swiss physiologist, botanist, and poet.

Opuscula sua botanica. Göttingen 1749. *Bischof* 8°.

OPUSCULA SUA | BOTANICA | PRIUS EDITA | RECENSUIT RETRACTAVIT | AUXIT | CONIUNCTA EDIDIT | ALBERTUS HALLERUS. | [engraved arms of Britain & Hanover, 2.35 x 3″] | [leaves in wavy line] | GOTTINGAE | APVD IO. WILH. SCHMID, ACAD. BIBLIOP. | A. cIↃ IↃcc XXXXIX.

COLLATION: 8°: *⁴ A-2A⁸ 2B⁶ (E4 I4 K4 R5 S3 T4 Z4 unsigned, X1 signed, 2B4 as 'Bb3'); [viii] 1-396 (264-65 as '164'-'165', 266 as '286'). *1: title, v□. *2: dedication to Peter Collinson, Johann Gottlieb Gleditsch, Johann Georg Gmelin, Christian Gottlieb Ludwig, Adrian van Royen, and Humphrey Sibthorp, signed 'ALBERTUS HALLERUS.', v□. *3: preface, dated (on *4ᵛ) 'In | GEORGIA AUGUSTA die VIII. | Martii MDCCXXXXVIIII.' A1: halftitle: 'ALBERTI HALLER | DESCRIPTIO ITINERIS ALPINI, *Suſcepti M. Iunio, Anni 1731.*', v□. A2: text, preceded by headpiece showing woman with spear, and dedication to Johann Gesner, signed 'ALB. HALLER.' C2: halftitle: 'DE | METHODICO | STVDIO | BOTANICES | ABSQVE PRAECEPTORE. | CVM BOTANICES ANATOMIAE | ET CHIRVRGIAE PROFESSIONEM | GOTTINGAE CAPESSERET | *DIE XII. OCT. 1736.*' C2ᵛ: 'MEDICINAE STVDIOSIS | S.' C3: text. E6: halftitle: 'III. | OBSERVATIONES BOTANICAE | EX ITINERE | IN SYLVAM | HERCYNIAM | SVSCEPTO.', v□. E7: text. K5: halftitle: 'IV. | ORATIO | DE BOTANICES UTILITATE | HABITA | IN PRIMO DECANATU | CVM HONORES MEDICOS CONFERREM | *Die XVII. Sept. MDCCXXXVIIII.*', v□. K6: text. L4: halftitle: 'V. | ITER HELVETICUM | *Anni MDCCXXXVIIII.*', v□. L5: dedication to August Johannes Hugo, signed 'ALBERTUS HALLER.' and (L5ᵛ) '*Ex Georgia Auguſta die 31. Octo-|bris 1739.*' L6: text. X1: halftitle: 'VI. | DE | ALLII GENERE NATURALI | LIBELLUS | *PRIMUM a. MDCCXXXXV. EDITVS.*', v□. X2: dedication to Royal Society, signed 'ALBERTVS HALLER.', v□. X3: text. No RTs except 'PRAEFATIO.'

PLATES: 5 foldout engravings of plants, titled in italic, signed except pl. *1*, keyed to pages. '*Tab.*' 1-2 signed '*C. I. Rollinus. Med. C. delin. C. F. Fritſch C. filius. ſculp.*'±; '*T. I.*' '*E. Büchel. delin. Baſil. I. C. Schrader. ſculptor Göttingen.*'; '*T. II.*'